

# THE PSYCHOLOGICAL BULLETIN

## THE CHARACTER OF CONSCIOUSNESS.

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In a preceding paper I attempted to state in a general way the difference between mental and physical facts.<sup>1</sup> The topic with which the present paper is concerned is the relation of consciousness to this distinction. Over and above the two fields which we mark off as the psychic and the corporeal is there not something real to which we may give the name consciousness? The question would hardly have seemed pressing had it not been for the remarkable series of articles upon consciousness which have appeared of late in the *PSYCHOLOGICAL REVIEW* and in the *Journal of Philosophy, Psychology and Scientific Methods*.

But, perhaps first of all, one should provide against vagueness and a merely verbal discussion, by plunging into and through the purely verbal part of the matter. The word consciousness is famous for the variety of its meanings; Bain has given us no less than thirteen senses in which the word has been employed.<sup>2</sup> And since his writing, this number has been perceptibly increased. But out of all the conflict of usage there emerge two meanings that are so ingrained in our daily speech that it would seem to me necessary to accord them recognition; though it is to be hoped that, in the interest of clearness, one will drive the other from the field. These meanings we may call, respectively, that of James Mill and that of Sir William Hamilton. "It is easy," says the first of these writers,<sup>3</sup> "to see what is the nature of the terms CONSCIOUS and CONSCIOUSNESS, and what is the marking function which they are destined to perform. It was of great importance, for the purpose of naming, that we should not only have names to distin-

<sup>1</sup> 'The Difference between the Mental and the Physical,' this journal, Vol. III, p. 1.

<sup>2</sup> Bain, *The Emotions and the Will*, 4th ed., pp. 539 ff.

<sup>3</sup> James Mill, *Analysis of the Phenomena of the Human Mind*, 2d ed., Vol. I., p. 224.

guish the different classes of our feelings, but also a name applicable equally to all those classes. This purpose is answered by the concrete term Conscious; and the abstract of it Consciousness \* \* \* that is to say, the words are *GENERAL marks*, under which all the names of the subordinate classes of the feelings of a sentient creature are included." By 'feeling,' of course, Mill means any kind of mental process; so that his definition is practically the same as that given in Professor Baldwin's *Dictionary*, where consciousness is defined as "the distinctive character of whatever may be called mental life."

With this as our meaning of consciousness our problem would, in part at least, at once be solved; consciousness would be but the universal mark of psychic occurrences; it would be nothing above, or in addition to, them; it would be simply the peculiar mode of behavior which they all display and which distinguishes them from material things.

There would remain, however, the question whether, in addition to these two groups of occurrences—the mental and the physical—there were not experienced by us something that could not be called merely the 'distinctive character' or the 'generic mark' of either group; and this brings us to our second meaning of consciousness. "Consciousness," says Sir William Hamilton, in his *Lectures on Metaphysics*, "may be compared to an internal light, by means of which, and which alone, what passes in the mind is rendered visible."<sup>1</sup> The most general characteristic of consciousness, he tells us, is 'that it is the recognition by the thinking subject of its own acts or affections,'<sup>2</sup> — a statement hardly distinguishable from those to be found in Reid.<sup>3</sup> But when directly criticising Reid, he expresses himself in other words. He believes in using the term consciousness 'as tantamount to immediate knowledge in general, whether of self or not'; it is now no longer mere introspection. "Consciousness and immediate knowledge are thus universally convertible; and if there be an immediate knowledge of things external, there is consequently the consciousness of an outer world."<sup>4</sup>

With this latter meaning of the word, which is almost identical with its usage of late by Woodbridge<sup>5</sup> and by James,<sup>6</sup> the problem of

<sup>1</sup> *Lectures on Metaphysics*, London, 1859, Vol. I., p. 183.

<sup>2</sup> *Ibid.*, Vol. I., p. 201.

<sup>3</sup> Cf. Hamilton's ed. of Reid, Vol. I., pp. 222 f.

<sup>4</sup> Hamilton, *Discussions in Philosophy and Literature*, New York, 1868, p. 57.

<sup>5</sup> Woodbridge, 'The Nature of Consciousness,' *Journal of Philos., Psychol. and Scient. Methods*, Vol. II., p. 119.

<sup>6</sup> James, 'Does Consciousness Exist?,' the same journal, Vol. I., p. 477.

the relation of consciousness to the psychical becomes live. I am not sure that either Woodbridge or James would, with Hamilton, require that the knowledge which we regard as consciousness should be 'immediate knowledge'; there is much in their papers to indicate that the distinction between immediate and mediated knowledge has for them no great importance. They are, however, clear upon the point that consciousness is merely a special type of relation — the cognitive relation, — and that, in some way, it is independent of the distinction between mental and physical things.

Professor Woodbridge has, with great clearness and force, set forth the view that consciousness is not at all defined by means of the distinction between 'the physical' and 'the psychical.' This differentiation, he tells us, "simply divides the field of consciousness into two parts, but does not isolate a separate field in which alone consciousness is found. Physical objects just as much as personal histories may be objects in consciousness. \* \* \* The differentiation in question thus appears simply to reveal between our objects one of the distinctions of which we are conscious."<sup>1</sup> The world would thus appear to be composed of physical objects, mental objects and the conscious relation. Whether this would exhaust the whole, according to Dr. Woodbridge's judgment, I could not say.

We shall now have to consider the truth of such a view. Is consciousness to be set off in this way, as something outside the class of activities we regard as psychic? If one has to express objections to the doctrine just set forth, this must not conceal the honor due so lucid and keen a piece of work.

The motives for distinguishing consciousness, as the knowing function, from the field of mental occurrences generally is doubtless that to any experience whatsoever there is at least the possibility of adding another stratum, the *knowledge of* the experience. James Mill was accustomed to say that the difference between these two layers is merely a difference of words; to have a feeling and to be conscious of the feeling are but two names for the same thing. But such a doctrine is unpsychological in the extreme; for it is one thing to be envious of another, and quite another thing to know that you are envious; a young man in love is not necessarily a young man conscious of being in love. When we are *conscious* of our thoughts and feelings, we have set them out before us; we have made them objects, while behind and through them are still seen the original objects of our

<sup>1</sup> Woodbridge, 'The Nature of Consciousness,' *Journal of Philos., Psychol. and Scient. Methods*, Vol. II., 119; esp. p. 124.

regard; whereas until then, our only object was the person envied or beloved. When the experience is thus pushed off and reconstructed, the additional feature may be of the thinnest and simplest sort, as when we have but a vague awareness of some object hitherto unnoticed. Or it may be a thicker and more intricate layer, as when I actively scrutinize the object and make myself clear as to its definite texture and connections. But in any event we have here a peculiar addition to the original facts, and one which may come to them whether they be physical or psychic. It consequently seems to mark the presence of a function free from the limits of the purely psychic field, and therefore to be distinguished as a more general and more inclusive activity.

It would seem to me questionable, however, whether the knowing function is unique in this respect. It doubtless stands alone, inasmuch as no other of our mental operations has exactly this same office of *knowing* all things. But other functions are like the knowing function; for they, too, apply themselves to all things whatsoever, no matter to what group or class these belong. Feeling ranges up and down the world as unconfined as knowledge. It spreads itself like a haze over all that comes before us, over the physical and the mental alike. Just as I can know the house I live in, or know the judgment I have made; so, too, both house and judgment may be tinged with pleasure or with pain. And if it should be said that this pleasure can in turn be made an object of knowledge, so that knowing is the highest and all-including function, I see no hindrance to the reply that the act of knowing can, in its turn, be pleasant or unpleasant. So that knowing seems to reach no regions that are unattainable by feeling.

Nor does either of these activities have wider scope than will. Just as all objects indifferently may be known and may be objects of sentiment, so too they may be objects of volition. I may take up an active attitude toward the house, as toward the judgment. I may will to examine it or to alter it, just as I may will to make any conclusion. I have reached an object of attention and of criticism. It would seem, then, that the volitional activity has a free course over the world, different in many ways from knowledge, but equally wide in sweep.

There is consequently a certain plexus of operations which can be imposed upon any object or system of objects. To the bare and neutral presence of the thing there may be added the experience that it is attended to, or is suffused with feeling, or is somehow involved in purpose. The readiness with which these additional layers may appear, their free occurrence with all manner of objects, and their

immense importance for us in every way, give us ample motives for selecting one or all of them for special intellectual honor. But since each is so important and they all are intimately conjoined, we should remember that if we select the knowing function and exclude the feelings and the will, it is *our doing* and does not signify that in the very nature of things knowledge has this superior rank.

Should we then say that all three are extra-psychical activities? Instead of merely one function that spans the distinction between body and mind and therefore refuses to be classed on the mental side, have we not three functions or at least a triple function that may not be regarded as a psychic power? That this would be embarrassing to psychology is perhaps no argument against such a withdrawal. The psychic realm is so largely made up of specialized forms of knowledge, feeling and volition, that if these were taken away it is doubtful whether anything would be left. The province would be not only without inhabitants but also without territory.

But for other reasons it seems to me that all these powers should be retained within the psychic group; and the main difficulty to their retention is removed when once we see that a part may here be greater than the whole. Knowing is but a part of our mental activity, yet it includes both mental and physical objects; it even includes itself. Feeling and will are each but a part; yet each extends over all things. But the way in which we regard knowing or feeling or volition, when we say that it is but a part, is not the same as when we say that it takes in all. When we say that it is limited and is but one among many, we are viewing it after the manner common in logical classification; we are intent upon the attributes it has and upon those it lacks. Knowing is rich in attributes; but something is absent from it, which at once stands forth when we look at will. We are therefore forced to say that knowing is but a specific kind of function, and is distinguished from many other kinds; it is but a part and not the whole.

But when we say that it includes all things, we are no longer intent upon its specific properties; we are looking at its range of operation, at the variety of things upon which it throws its light. In other fields the two points of view are easily kept distinct: space, as regards its properties, is limited and partial; it is logically outside the class we call physical bodies; yet it includes all physical bodies, since they exist in space. Time has but limited properties; it lacks many that space displays, many that motion displays; yet there is no space nor motion which is beyond the reach of time. So that there is nothing unique in the fact that consciousness, in the sense of knowing, is a



member of a special group of functions — belongs on the psychic side and not on the physical — and yet operates freely on both sides of the line.

There is, however, this farther peculiarity about the fundamental functions of the mind, namely, that they include themselves in their range of operation. I can know that I know, I can will to will, I can become sentimental and take a sad pleasure in my own distress. Self-knowledge is mysterious enough, we must all admit; but it is not a mystery essentially different from knowledge of a less reflective type. The direction the function takes, the special character of the items it works upon, does not fundamentally alter the nature of the function itself. To know remains essentially the same type of act whether the object known be a thing or a thought, be a spatial relation or a logical relation; as sight is essentially the same function whether we be looking at a scene without or looking at a reflection of the eye itself.

Moreover, this fact of self-consciousness will perhaps assist us properly to place consciousness in the world of objects known. The fact that consciousness can overspan the distinction between the mental and the physical has led to the conclusion (which, as I have said, seems to me mistaken) that consciousness is something to be classed as outside the psychic field. But since consciousness itself can be known, and can become an 'object,' though not a 'thing,' in consciousness, and can distinguish itself from other objects, — in view of this, should we not feel forced to say, if we consistently followed the direction which Professor Woodbridge takes, that consciousness itself was not at all defined by distinguishing between the conscious relation and the terms related in consciousness? "This differentiation," we might say, in words like his own, "simply divides the field of consciousness into two parts, but does not isolate a separate field in which alone consciousness is found. The conscious relation, quite as much as the terms related, may be an object in consciousness. The differentiation in question thus appears simply to reveal between our objects one of the distinctions of which we are conscious." But reasoning like this, which seemed almost unanswerable when confined to the distinction between mental and physical things, begins to seem no longer trustworthy when we carry it along this farther step. The fact that in consciousness we can surmount the distinction between the conscious and the unconscious does not persuade us that consciousness itself is still eluding us. On the contrary, it makes us more certain as to what consciousness is. It brings home to us in a way more forcible than

were otherwise possible that the knowing function can recognize its own qualitative limitations, can see that (so far as logical classification is concerned) it does not possess all properties and that its form of connection is different from various other forms; and yet in spite of this modesty in regard to its qualities, its function is seen to extend quite beyond the special class of 'objects' in which it puts itself. The situation is in some respects like that of a large mirror in a room, on the opposite wall of which there hangs another large mirror. Each mirror, while remaining but a part of the room and its furnishings, reflects the whole room, including itself,—includes the very mirror in whose surface the whole is reflected. The mirror takes in all, yet remains but a portion of the complex object it has before it. The universal scope of knowing, feeling and will — the fact that they can make even themselves their objects — seems to me no sufficient reason for denying them a place among psychic facts. Each has a limited mode of activity, while each has an unlimited field of action.

Two possible obscurities should perhaps be cleared up at this point. First, does not consciousness antedate the distinction between thought and thing? Are there not periods of what James calls 'pure experience,' in which the innocence of consciousness knows no such difference as that between mind and body? And would not this imply that consciousness is something superior to mental and physical alike? The answer seems to me to be that consciousness is independent of the *thought* of the difference between the two, but not independent of the *actual difference itself*. We need here to keep the genetic problem separate from the ontological. The child's earliest sensations are independent of his thought of sense-organs or of nerves; but not independent of sense-organs and nerves themselves. His perceptions of the outer world precede his power to distinguish between his sensations and his interpretive supplementing of these sensations; yet his perceptions do not precede the actual difference between these two factors in his inner life. As regards the contrast between physical and mental, we may say, therefore, that consciousness precedes the distinction but does not precede the difference. Ontologically the difference is there perpetually, and does not wait for us to become aware of it.

The other possible difficulty I would briefly refer to is this: if one were to say that the difference between mental and physical things consists in some difference in their mode of behavior (as I have said in my preceding paper) would not this be inconsistent with the view here taken that knowing and feeling and willing are to be classed as psychical in spite of their ranging, in their operations,

through all the physical realm? Only a word is needed to point out that *range* is by no means the only characteristic which an operation may reveal. As regards range, there is a certain similarity between thought and gravitation. But *laws* of thought are totally different from the *law* of gravitation. And this difference of their laws is but an expression of a difference in their modes of behavior. So that the distinction between the mental and the physical, which I proposed in my previous paper, is not at all contradicted by saying that some mental things in their operation spread over both mental and physical things.

In answer then to the question with which this paper began, I would say that there is something real to which we may give the name consciousness, but that it is not a reality which our distinction between physical and mental leaves out of account. It is either the 'generic mark' of all psychic processes, or else, in its other sense, it is a special one of these processes—the knowing function. But the knowing function, while singled out in this way for special honor, does not in the nature of things stand out alone. It is but an abstraction within a more complete process, in which emotion and will are found. These, too, conjoin objects into a relation which is quite as real and significant for us as is the knowledge relation. The continuum into which the mind builds its objects, as Professor James and Professor Woodbridge have helped us see, is marked by the fact that one object represents another, leads up to another and finds there its fulfillment. But this fulfillment is more rich and varied than a consideration of knowing would lead us to realize. An object may find itself fulfilled in a cognitive way; but it is equally true that an object may lead up to another and find, not a cognitive, but an emotional or a purposive fulfillment. There are many kinds of psychic continua; there are many kinds of transitions and fulfillments; and the knowledge relation is but one of the many psychic connections to which these terms apply. In applying the word 'consciousness' to the cognitive act, it should not be understood that knowing is the supreme function in the world of objects, or that it really breaks loose from those connections with feeling and will which modern psychology has recognized. But since the term 'consciousness' so readily suggests an independent function, and since it also so readily suggests something different from knowing, it would seem to me best for us to say 'knowledge' when we mean knowledge, and let the term 'consciousness' designate the common and generic features of our psychic acts, for which its historic breadth of usage so well adapts it.



## PSYCHOLOGICAL PROGRESS IN 1905.

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If repeated search for a thing or relation may be taken to be some degree of proof of its existence, then the fact of psychological progress has been well attested during the elastic period under present consideration. The masters have been turning their unerring pens to the description of the science's past and to an invoice of its solvent assets. Baldwin's 'Sketch of the History of Psychology,'<sup>1</sup> Wundt's account of the development of modern psychology,<sup>2</sup> and Höffding's 'The Present State of Psychology and its Relations to Neighboring Sciences,'<sup>3</sup> show how scientific history may contribute to a science itself. These are more than mere selective narratives; they are vigorous and independent interpretations of psychological principles. To Baldwin the history is clarified through identification with the genetic processes presented by self-consciousness in the individual. Wundt finds the unity in Hegelian philosophy to be the inspiring seed of the last century's developments. To Höffding, the analytic and the synthetic aspects of the mental life alike give the science a position in the circle of sciences as mediatory between the physical and the social extremes. These many-sided reviews of past efforts and present achievements are progressively helpful in securing solidity to the readjustments which characterize the present day.<sup>4</sup> They bespeak the unity of the science; and historic progress must somehow show that said unity is more and more becoming actual in the teachings of science either individually or collectively.

Amid the shifting industry of many workers and the crossing lines of interests, it is not easy to determine the unquestionably greater tendencies which pull the lesser threads in their direction. The year we are called upon to sketch presents two features which are marked in spite of the infinite multiplicity of facts, theories and views. The

<sup>1</sup> Before the St. Louis Congress of Arts and Sciences, 1904, PSYCH. REVIEW, March-May, 1905.

<sup>2</sup> In *Die Philosophie im Beginn des zwanzigsten Jahrhunderts*, 1904. (*Festschrift* for Kuno Fischer, edited by Windelband.)

<sup>3</sup> St. Louis Congress, PSYCH. REVIEW, March-May, 1905.

<sup>4</sup> See 'Psychological Progress in 1904,' PSYCH. BULLETIN, March 15, 1905.

most interesting trait has been the continued effort to develop a more and more satisfactory *relational* theory of consciousness. This labor accredits its results to the standpoint of psychology as a science and to 'pragmatism' as a philosophical theory. Psychologists are beginning to feel the beneficial relief from the earlier traditional necessity of regarding consciousness as a 'thing,' a definite somewhat, offering itself as a scientific constant. Consciousness, many voices and more echoes are saying, is simply a relation or a number of relations *between* 'objects,' while objects are never *in* consciousness.

The other trait to be mentioned is progressive rather than reconstructive. It is the tendency to do, particularly in experimental matters, a small piece of work thoroughly and exhaustively. The methods of exact observation have sought to delimit the problems attacked, and insist upon being more critical of earlier pieces of work appearing from our laboratories. To be sure, there have been in the past repeated instances of a patient redoing of work, as in the measurement of reaction times, threshold determinations, etc.; but at present the reattacks are more genuinely entered upon with the avowed purpose of securing the maximum benefit from an impersonal mathematical method. This tendency rests upon two supports: the history of solutions for specific problems, and the disagreements among the experimenters. No more wholesome trait than this could appear, inasmuch as it is full of promise of future growth.

The most interesting feature in clearing up the physical conditions of consciousness to be mentioned is Flechsig's communication to the Leipzig Academy of Science.<sup>1</sup> This very sane comparison of the different neurological methods contributes much towards a settlement of 'the Flechsig question,' as it might be called, in the recent developments in this part of the psychological field. This paper goes far towards showing that science may be synthetic and constructive in spite of the opposition of personalities. It should interest psychologists that, in his St. Louis paper,<sup>2</sup> Donaldson points to the nervous system as constituting the source of the chief problems for investigation, inasmuch as it is 'the master system of the body,' in which sight of the constructive units is lost. So far forth one is, happily, relieved from the necessity of a decision whether the continuity or the contiguity theory of the neurone is the correct view. Basing his conclusion upon results

<sup>1</sup> 'Einige Bemerkungen über Untersuchungsmethoden der Grosshirnrinde, insbesondere des Menschen,' January, 1904. (See the *Johns Hopkins Hospital Bulletin*, February, 1905.)

<sup>2</sup> 'Problems in Human Anatomy,' *Science*, January 6, 1905.

obtained by Hitzig some five years ago, and more recent confirmatory results secured by Imamura, experimenting by methods of extirpation of the visual and motor fields, Exner formulates the view that the physiology of alternating hemiamblyopia depends upon the fibers of the corpus callosum, which furnish the necessary channels for the afferent currents from the side of the brain remaining intact.<sup>1</sup>

During the same month in which Professor James advised us that consciousness does not exist, Professor Cattell maintained that consciousness is the most pervasive thing, appearing where and when least expected.<sup>2</sup> In the same breath he contended that psychology is not definable. The logical lack of determinability of the science, however, does not prevent there being 'psychologists.' Whatever these students study, *qua* psychologists, constitutes the field belonging to the science! The real interest in such an attitude is not in the challenge it presents to the definers and the determiners, but in its indication of the widening of the field of mental inquiry. Professor Cattell thus holds forth the promise of larger things for the future, and in so doing he but reaffirms the recurrent attitudes which during two decades have been clearing more ground for the advent of the psychologists.

Our year has been more quiet than its predecessor in regard to the general attitude that should be taken towards the science. That the scope and nature of psychology continue to be 'open' questions may be shown by such discussions as that presented by Miss Calkins.<sup>3</sup> The treatment of the associational and the self-psychology leaves one with the query whether there might not after all be more than two points of view. Two new manuals by American psychologists show how the issues of standpoint and method determine the content and procedure of the science when it is to be taught.<sup>4</sup> Interestingly enough, both may be regarded as the work of experimentalists; but each takes a different attitude towards the value of experimentation as a pedagogical means in psychology. Angell's book presents a marked divorce of actual testing from the older well-known and well-used methods of systematic exposition. Thorndike's book, on the other hand, is notable in following up the text with 'exercises' and 'experi-

<sup>1</sup> 'Zur Kenntniss des zentralen Sehaktes,' *Zeitsch. für Psych. u. Phys. d. Sinnesorg.*, 1904, pp. 194 ff.

<sup>2</sup> 'Conception and Methods of Psychology,' address before St. Louis Congress, *Popular Science Monthly*, 1904, p. 176.

<sup>3</sup> *Der doppelte Standpunkt in der Psychologie*, 1905.

<sup>4</sup> Angell's *Psychology: An Introductory Study of the Structure and Functions of Human Consciousness*, 1904. Thorndike's *Elements of Psychology*, 1905.

ments'; but these are not so treated as to class the work with the experimental manuals. The books agree in the determination to take the 'structural' and the 'functional' (Angell), the 'descriptive' and the 'dynamic' (Thorndike) sides of psychological problems. In maintaining a strongly flavored biological point of view, the outcome of both texts tends to regard consciousness as merely one among many manifestations of organic life.

That the psychological world is not at peace with itself on this question of method also appears from a contribution of Binet to individual and child psychology.<sup>1</sup> His study of young members of his family by a combination of 'tests' and introspection was primarily designed as a means of heralding 'a new movement' in method. This is to supersede the 'Wundtian epoch,' which has been physiological and statistical. In his reaction against persistent quantitative ideals, Binet demands that we pay attention to the individual traits of experimental subjects, and that study be made of the higher mental processes and not of the lower elements. Binet's position seems to be national. Shall France give us a new method of psychologizing? Toulouse, Vaschide and Pieron, in presenting the result of several years' work,<sup>2</sup> from their own point of view, consider only the technique of 'tests' by which the mental qualities of an individual are measured. Independently of practically all previous work done on 'tests,' they attempt to formulate a system of psychological tests which are to be standardized by pointing out the exactly reproducible conditions in measuring subjects. Neither of the above is to be compared with the permanent addition Titchener continues to make to the finished literature of experimentation as a definite and well-established mode of approach to psychological problems.<sup>3</sup> That our methods are not determinately, and thus scholastically, fixed for a growing science, as psychology ought to be, is well indicated by the tentative adoption of several methods by Miss Martin,<sup>4</sup> and by Professor Cattell's severely critical estimation of introspection in his St. Louis address, already referred to. The interest of the year, however, has not centered about this theme of perennial debate.

The best symptom of progress in the field open to experimentation is to be found in Professor Titchener's significant and timely St. Louis

<sup>1</sup> *L'étude expérimentale de l'intelligence*, 1903.

<sup>2</sup> *Technique de psychologie expérimentale (Examen des sujets)*; Toulouse's Bibliothèque internationale de psychologie expérimentale, 1904.

<sup>3</sup> *Experimental Psychology: A Manual of Laboratory Practice*. Vol. II., Quantitative Experiments, 1905.

<sup>4</sup> 'Psychology of Aesthetics,' etc., *Amer. Jour. of Psych.*, 1905, pp. 35 ff.

address, which became available near the beginning of the year.<sup>1</sup> Looking both backward and forward, this unusually excellent review of progress, trenchantly stated in terms of present experimental ignorance, will remain for some time to come an open guide in our laboratories. His earnest plea for a more thorough testing of available methods and renewed research over much of the old ground is already being realized. Three of the most interesting and contributory pieces of work to be noted acquired their merit of permanency by just such means. Wallin has done his work exhaustively, presenting historical and experimental results which can be finally accepted as he offers them.<sup>2</sup> While not fundamentally modifying the facts regarding such illusions, we can now at least feel certain about what we do know of the conditions controlling such perceptions. Baird has likewise, and in the same manner, made a distinct contribution to our knowledge of retinal color sensitivity.<sup>3</sup> The experimental caution maintained after the preliminary historical summary of various inquiries into the color coefficients of the retinal zones, gives a feeling of acceptable certainty regarding the facts relating to the color modification of a constant stimulus by different sections of the retinal periphery and to the topography of the retina as fixed by the correct sensing of different colors. Perhaps the most interesting experimental material made available during the year, which also shows how psychologists should make repeated attacks upon the same problems, is offered by Judd, McAllister, and Steele, as reported in the new series of the *Yale Psychological Studies*.<sup>4</sup> It presents eight studies centering around features of certain eye and hand movements. Great ingenuity and skillful device produced a new and accurate means of recording the complicated facts in eye movements by kinetoscopic photography and its application to a detailed study of the Müller-Lyer, Poggendorff, and Zöllner illusions respectively. This method, which makes a radical improvement over that of Stratton and Dodge, shows that the eye, instead of fixating a point, really fixates a small area, about which it wanders. The two eyes literally remain *two* in the process of fixation, inasmuch as they are not absolutely coördinate, except in the case of fixating a straight short line. In reëxamining the 'antagonistic'

<sup>1</sup> 'The Problems of Experimental Psychology,' *Science*, December 9, 1905, also *Amer. Jour. of Psych.*, 1905, pp. 208 ff.

<sup>2</sup> *Optical Illusions of Reversible Perspective, A Volume of Historical and Experimental Researches*, 1905.

<sup>3</sup> *Color Sensitivity of the Peripheral Retina*, 1905 (a monograph published by the Carnegie Institution).

<sup>4</sup> Issued as Monograph Supplement No. 29, *PSYCH. REVIEW*, 1905.



movements in ordinary reactions, discovered by Smith and studied previously by Moore, the same investigators discovered that reaction movements are really more varied in their composition than has been supposed hitherto, as is indicated by the types which may be classified as 'antagonistic,' 'wavy,' and 'balanced.' The relation of these newly discovered facts will probably modify some of the more prominent sensory-motor and action theories which have held the field for a decade or more. As in earlier years, problems of vision and visual movements continue to receive their ordinarily large amount of experimental attention.

There appears to be a partial subsidence of interest in the question of the nature of mental contents, and especially the primitive form of conscious experience. Such manifested interest as may be noted<sup>1</sup> tends to agree in the conclusion that primarily consciousness is of the nature of feeling. It would also seem that affection, the most neglected type of all experience, is coming in for a modicum of interest. The experimentalists are more and more critical of past results from laboratories, some of them going so far as to maintain that up to date we truly have no psychology of feeling. By way of strong contrast, the great formulators of leading positions are, interestingly enough, giving a larger sphere to feeling than ever before: so Hall in *Adolescence*, so Wundt in the final revision of his psychology has characteristically put feeling more nearly at the basis of his analysis of consciousness. Johnston has summarized the work done, and the views held in this field,<sup>2</sup> and Ribot has given a marked addition in the completion of his work on the psychology of feeling.<sup>3</sup> His classification of feeling as 'passional,' 'unconscious' and 'justificative' is not in entire agreement with the functional point of view maintained in this work. A bit of adjustment has been undertaken by Geiger, who, in harmonizing the well-known positions of Lipps and of Wundt, demands that feelings be regarded both subjectively and objectively, in order that they may receive a treatment into elements and relations, much the same as sensations receive.<sup>4</sup> Some new disposition of psychological content may be anticipated in the lately announced new work on genetic logic by Baldwin.

<sup>1</sup> Davies, 'An Analysis of Elementary Psychic Process,' *PSYCH. REVIEW*, March-May, 1905. Cf. also the views of Dr. Gordon in *Jour. of Phil., Psych. and Sci. Meth.*, Nov. 9 and 23, 1905.

<sup>2</sup> 'The Present State of the Psychology of Feeling,' *PSYCH. BULLETIN*, May 15, 1905.

<sup>3</sup> *La Logique des Sentiments*, 1905.

<sup>4</sup> 'Bemerkungen zur Psychologie der Gefühlselemente und Gefühlsverbindungen.' *Arch. für d. Gesamte Psych.*, 1904, IV., 233 ff.

Psychological æsthetics continues to show the tendency of constructive systematization. Volkelt, in following Lipps and Witasek with a massive volume,<sup>1</sup> presents the newer æsthetics, derived from the modern psychological methods. His aim is 'to unite the standpoint of modern psychology with that appreciation for the deeper significance of the æsthetic which characterized the school of speculative æsthetics at the beginning of the nineteenth century.' To do this he draws heavily upon art material and tends to reject the current doctrine of *Einfühlung*.

Vorbrodt, in giving the third<sup>2</sup> of the interesting series of essays begun in 1893 and not yet ended, continues to show that, inasmuch as religion deals primarily with a mental content, theology must undergo reconstruction at the hands of psychology. Theology, like pedagogy, is only applied psychology. How far this reconstruction and application should go before psychology has completed its treatment of this form of consciousness, may be judged from King's treatment,<sup>3</sup> which ought to serve as the beginning of a more healthful movement in the treatment of these complex experiences called religious.

That social psychology may come to include sociology in so far as the careful analyses of individuals in social relations is concerned, is a position which seems to be gaining ground. Extremists, however, are sometimes instructive by way of showing how attitudes may come to be general. Thus according to Draghiscesco,<sup>4</sup> individual consciousness originates in social consciousness, and the psychology of the individual must turn away from a biological explanation of his experience in terms of physical conditions. One would prefer to go to Ross's balanced scheme for tracing out the ramifications of psychological interests in the different fields of human life.<sup>5</sup> A good illustration of basing social analyses on the import of psychological values is presented by Ghent,<sup>6</sup> who interestingly traces the dominant economic character of society to mental development as the explanation of social changes. Small has given us a work<sup>7</sup> which happily serves our science

<sup>1</sup> *System der Aesthetik*, Bd. I., 1905.

<sup>2</sup> *Beiträge zur religiösen Psychologie: Psychobiologie und Gefühl*, 1905.

<sup>3</sup> *The Differentiation of the Religious Consciousness*, Mon. Suppl. No. 27, PSYCH. REV., 1905.

<sup>4</sup> *Du rôle de l'individu dans le déterminisme social*, 1904.

<sup>5</sup> 'The Present Problems of Social Psychology, *Amer. Jour. of Sociology*, January, 1905.

<sup>6</sup> *Mass and Class: A Survey of Social Conditions*, 1905.

<sup>7</sup> *General Sociology: An Exposition of the Main Developments in Sociological Theory from Spencer to Ratzenhofer*, 1905.

by showing the gradual historical process of the in-weaving of psychological standpoints and concepts into the scientific treatment of society.

By reason of the excellency of its records and experiments, and the remarkable character of the case reported, Sidis and Goodhart's volume<sup>1</sup> becomes a permanent contribution to our literature on the variations of personality. Franz's systematic review of the experimental work done on feeble-mindedness<sup>2</sup> prepares the way for future investigations in the psychology of the mental defectives and deficient. Psychiatrists are tending to show a greater reliance than formerly upon the value of exhaustive description and analysis of abnormal mental states for presenting the real problems of abnormal psychology, as indicated by several recent studies on association.

There is not space to touch upon the spirit of systematic reconstruction which is affecting philosophy as well as psychology, nor to point out the peculiar credits accruing to the latter from the various phases of the former as it is expressing itself in some of the notable works of the period given by Fullerton, Hyslop, Simmel, Santayana and others.

As a more quantitative way of indicating the bearings of the psychological interest upon the different fields, the following table, based upon the *Psychological Indexes* for 1903 and 1904, is very instructive. In spite of the increase of 62 per cent. in the entries for 1904 over those for 1903, five rubrics retain the rank they held a year ago.

1903		1904	
No. of Titles.	Rubric.	No. of Titles.	Rubric.
384	Higher manifestations of mind.	751	Sleep, trance and pathology.
373	Genetic, individual and social psychology.	541	Genetic, individual and social psychology.
377	Sensation.	539	Sensation.
271	Anatomy and physiology of the nervous system.	478	Higher manifestations of mind.
219	Sleep, trance and pathology.	362	Anatomy and physiology of the nervous system.
174	General.	269	General.
118	Cognition.	206	Conation and movement.
102	Conation and movement.	165	Cognition.
66	Characters of consciousness.	93	Characters of consciousness.
38	Affection.	41	Affection.
2,122		3,445	

<sup>1</sup> *Multiple Personality: An Experimental Investigation into the Nature of Human Individuality*, 1905.

<sup>2</sup> *Jour. of Phil., Psych. and Sci. Methods*, pp. 295 ff., 1905.

The year has also added new channels for the periodic and irregular publication of psychological material, two being in Italy. De Sarlo is directing the publication of the new *Ricerche di Psicologia* for the Istituto di Studi Superiori at Florence, and the *Rivista di Psicologia applicata alla Pedagogia ed alla Psicopatologia* is edited by Ferrari. Lipps has also begun his new series of *Psychologische Untersuchungen*. In America the recently published first number<sup>1</sup> in the *Archives of Philosophy, Psychology and Scientific Methods*<sup>2</sup> marks the completion of a unique plan of scientific publications, being under the editorial management of a single university, and providing for the issue of current articles, monographs, and books.

The associational interests of the science expressed themselves, in addition to the annual meetings of the several organizations centering about psychology, chiefly in the Fifth International Congress of Psychology, which was held in Rome, Italy, April 26-30. It might be questioned whether the results, so far as they have appeared, in the department of psychology at the St. Louis Congress of Arts and Sciences in 1904 realized the aims attempted. The geographical unity of time and space afforded the international speakers must not be mistaken for the inner and progressive unity of a science or of all the sciences taken in their totality. As for the psychologists, there was no marked agreement; each continued to speak then just as he had hitherto thought in his individual capacity. Such agreements as appeared along minor lines were notable for lack of accompanying projection of new fields for inquiry.

A few notable events touching the good and ill external fortunes of psychology came to pass. The international exchange of representative scholars between German and American universities well-nigh rings in the scientific millennium. For some time there has been a *cis*-Atlantic feeling that some few American institutions had finally advanced to the position where they could, with confident ability, offer advantages in some specialties of instruction and research not excelled by the justly famous institutions of the old world. This feeling has now been justified by the historic deeds which first established scientific comity in the interest of national development. This exchange of professors, while primarily affecting institutions as wholes, still augurs well for the future of psychology.

Leland Stanford Junior University marked the year by assigning to a psychologist, Professor James, the rare task of inaugurating a

<sup>1</sup> *Measurement of Twins*, by Edward L. Thorndike.

<sup>2</sup> Published by The Science Press, New York.

department of philosophy. The University of Liverpool began a lectureship in experimental psychology. Princeton University, while installing its novel tutorial system, credited psychology and philosophy with five preceptors. It remains for the future to assure us how much and what kind of new life this plan may bring into our scientific field. The dedication, on December 27, of Emerson Hall at Harvard University, indicates anew the friendly relations which psychology sustains to the other philosophical sciences which are there to be domiciled in peace under one roof. As soon as the *Biographical Directory of the American Men of Science*, compiled by one of our psychologists, Professor Cattell, and promised in the autumn of the year, appears, we may have a definite and new means of determining the proportion which psychologists bear to the researchers in other fields of science, since psychology is to be one of the twelve sciences listed in the directory.<sup>1</sup> The compilation may indeed well be interpreted as a means of gathering certain data available for psychology itself, namely, the psychology of the 'trained men of science' when constituting a distinct group in social organization. The final withdrawal of Professor Ladd from Yale University will not, every one hopes, mean the cessation of his constructive influence in scientific systematization, and in developing right attitudes towards psychology in the ultra-psychological world. The science sustained a great loss in the sudden death, June 15, of Dr. Carl Wernicke, who, through the approach of mental pathology, has made invaluable contributions towards the adequate interpretation of speech complexes.

<sup>1</sup> It has appeared since the manuscript of this article was sent to the printers.



## PSYCHOLOGICAL LITERATURE.

### PRAGMATISM.

*Pragmatism v. Absolutism.* R. T. ALFRED HOERNLÉ. *Mind*, 1905, XIV., Nos. 55 and 56.

In his discussion of Absolutism *versus* Pragmatism, the author fulfills in a most satisfactory way his avowed purpose of giving as impartially as possible the standpoint of each of these schools with regard to the problem of truth and knowledge. It is about this question that the contest between the rival theories centers. Mr. Bradley is taken as representing the position of absolutism most adequately. The most complete exposition of pragmatism is found in the writings of Mr. Schiller and Professor James.

The real importance of the contest is recognized only when it is seen as a new phase in that broader conflict between voluntarism and intellectualism which began in Germany in 1840. Pragmatism, indeed, represents the beginning in England of the revolt against 'the barrenness of the absolute,' the reaction from the reign of pure thought. In so far it is at one with the voluntarism of Schopenhauer, Sigwart and Paulsen. It differs from this earlier phase of voluntarism, however, in being less metaphysical and less strongly ethical. Its problem is the problem of knowledge, and its answer to the problem is to be found in the assertion that consciousness is essentially *one* in character, *purposive* in its nature, with conation, not cognition, as its most important feature.

Mr. Bradley's position with regard to the nature of reality and truth is summed up briefly in the following quotation: "I have assumed that the object of metaphysics is to find a general view which will *satisfy the intellect* and I have assumed that whatever succeeds in doing this is real and true and whatever fails is neither." The absolutistic theory of knowledge, as given by Mr. Bradley, is based upon the assumption that reality is a self-consistent, systematized, individual whole. Such a unified individual reality must be, otherwise it would be made up of a number of independent units, and plurality itself implies relationship in the form of coexistence. This fundamental proposition with regard to the nature of reality once accepted, all possibility of attaining the truth through knowledge is lost. Knowledge is

the purpose of thinking, to think is to judge, and to judge is to give to reality, to sentient experience, the subject of our judgment a thought content. Hence thought, since its function is to qualify reality, must deal with relations; its nature is adjectival. Thought can give us only the appearance of reality, never reality itself. Since reality is self-consistent, and qualification of reality is the purpose of thought, thought itself is valid in the degree to which it too is self-consistent or non-contradictory. The criterion for truth, then, according to Mr. Bradley, is *non-contradiction* or the *consistency of thought within itself*. It is obvious, therefore, that truth is a goal forever removed beyond the reach of thought's activity, that it is an ideal never to be attained. For a thought thoroughly self-consistent must have lost its relational character, must have destroyed itself as thought. Truth once achieved has ceased to be truth and has become reality.

Tested by the criterion of non-contradiction all of our most important concepts — time, space, causality, relation — are found to be unreal, mere appearances. Error, pain, evil, goodness, the long list of appearances that make up the sum of human experience, testify one and all to the limitation of the finite mind. An appearance as Mr. Bradley views it is a limited, inadequate, inconsistent aspect of reality. Appearances, however, differ in the degree of internal consistency which they possess. The reality of an appearance is proportionate to its inner self-consistency, and reality is nowhere found save in its appearances.

If thought is powerless to give us reality, feeling is not more successful. It surpasses thought in that it possesses that immediacy and self-subsistence of true reality which the duality of thought destroys, but it fails in that it points ever beyond itself for its explanation. The aim of thought is an experience which shall retain the character given to it by thought's analysis, and which shall yet possess the immediacy of feeling. Such a super-relational experience, in which feeling is satisfied and thinking absorbed, is found in the absolute. In this higher experience the contradictions, inconsistencies, mere appearances of our life are *somehow* merged, reconciled, transmuted.

At the end of this summing up Mr. Hoernlé makes several inquiries to the point. Because we are unable to prove that appearance is not *somehow* transmuted in the absolute, is it therefore certain that it *is* somehow transmuted? How can Mr. Bradley reconcile time and space as we know them with a timeless, spaceless experience? The analogy which Professor Royce draws for us between the 'Eternal Now' of the absolute and an infinitely extended human time span is unsatisfactory. For the human time span is simply the period between

two oscillations of attention. During this period attention is always focussed according to the interest on some particular impression for which the other impressions pouring in upon us form the background. But in the 'Now' of the absolute each detail stands out equally clear with all the others. It is impossible to make unchanging attention synonymous with experience of the unchanging. Nor does Professor A. E. Taylor's explanation of time and space as manifestations of the inner logical affinity of interest and purpose in the finite mind leave us much wiser as to why reality should reveal itself to us as time and space at all. Again, we may ask, if evil, pain and error are eliminated in the absolute, to what end are all our human efforts to remove them? If thought, if the thinker, if Mr. Bradley himself is but appearance, how can he get at reality at all? And yet it is only by first making an assumption about reality that he can prove that the facts of experience are mere appearances. So much for the difficulties of absolutism.

The pragmatist starts with the other end of the problem. Experience itself is the basis for his investigations. He aims to study the process of knowledge itself and to discover from it the conditions and reasons for those views of the world that we call real and true. So studied cognition is found to be essentially *purposive* in its nature. Thinking, like action, is for an end. The starting point for both is a situation which is disharmonious, the end of both is the solution of the problem, a satisfactory readjusted situation. Applying this doctrine of the purposive nature of thinking to the question of validity, the pragmatist rejects the statement of Mr. Bradley that a theory is true because it 'satisfies the intellect,' and presents the opposing doctrine that a theory is true 'because it *works*.' Just here Mr. Hoernlé points out the way by which these conflicting criteria may be reconciled. A theory is neither true because it works, nor does it work because it is true. The fact that it satisfies the intellect and that it works are complementary aspects of truth. The 'truth experience' is the end of a cognitive process, it is the solving of a doubt, the making satisfactory a concrete, disorganized situation. Truth has no determinate nature of its own, it is determined by our knowledge and is relative to the particular situation. There is no such thing as an eternally unchanging truth. The validity of a law is tested by its application in our experience. An axiom is a postulate so verified. All of the concepts, abstractions of science, need to be brought at frequent intervals before the bar of experience that judgment as to their value may be passed upon them.

Professor James's most important contribution to pragmatism has

been his arraignment of the abstraction necessity. Like the concept realism, determinism arose as the result of a world view which did not take into account man and his activity. It met the need man felt at certain times of knowing what results would follow certain natural processes, given certain definite conditions and leaving out of consideration all action on his part. It is misapplied when it is used to interpret the spiritual life of man. Indeed, when the moral consciousness of man is taken into account, it is found that mechanical processes are themselves modified and determined as instruments for the attainment of certain ends which man himself chooses from among many. In his choice of ends man makes the experience of the future, he himself creates reality. So we find a number of conflicting views of the world all equally justifiable, the logical, the æsthetic, the religious, the practical. The problem of harmonizing these is the problem which pragmatism leaves unsolved. The suggestion made by Mr. Schiller that all truth rests ultimately on an ethical basis and is dependent on social recognition leaves us unconvinced. Nor does it seem safe to leave the question of validity in the hands of the psychologist. Validity cannot exist apart from the cognitive process, each living thought may lay claim to truth. Psychology's method of retrospective self-observation, however, kills the thoughts and so destroys its validity. We must find our criterion for truth, Mr. Hoernlé maintains, apart from all individual subjective opinion in our common life, in our 'Arbeitswelt.' By this recognition of a broader experience within which our lives are but parts we retain the element of truth in absolutism and at the same time supply the standard for objective truth which pragmatism lacks.

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#### PSYCHOLOGICAL STANDPOINT.

*Die Wege der Psychologie.* THEODOR LIPPS. Arch. f. d. ges. Psychol., 1905, VI., 1-21.

There are three paths or kinds of psychology, Lipps here teaches. The first of them is that which all psychologists must follow, 'the path of description.' It is not a causal science, and its objects are the I-of-consciousness, the immediately experienced I, and the experiences of this I, namely, the sensational, emotional, and active contents of consciousness.

The second kind of psychology is named by Lipps pure psychology or pure science of mind (*Geisteswissenschaft*). From de-

scriptive psychology it is distinguished in that its object is the I-in-itself (p. 9); and also because descriptive psychology has to do with mere habits of consciousness, whereas this pure psychology concerns itself with the laws of consciousness (p. 8). These laws differ from the laws of pure natural science in that they are rational, not causal.

From this pure psychology Lipps distinguishes, in the third place, (p. 10) a causal psychology 'for which the individual consciousness is object of knowledge, not \* \* \* this or that individual consciousness, but the individual consciousness in general (*überhaupt*).' Now the individual consciousness, Lipps says, is 'the consciousness which belongs to, or is possessed by, this or that individual' (p. 11). The individual is consequently "that to which a consciousness belongs, or that which has a consciousness. This, however," he continues, "is necessarily a something different from the consciousness. The individual \* \* \* whose consciousness is, is neither a single event of consciousness (*Bewusstseins-erlebnis*) nor a system of such events \* \* \*, it is rather something real; it is a position in the ordered complex of the objectively real world (*eine Stelle im Zusammenhang der dinglich-realen Welt*)." The individual is, in sum, the soul or the real I of which the I-of-consciousness (*das Bewusstseins-ich*) is the mere phenomenon (p. 12). This real I, Lipps goes on to say, is causally related with the objectively real world which surrounds it.

Closely similar to this causally explanatory psychology is psychophysiology, which arises from the empirical necessity of conceiving the life of consciousness as simultaneous with the system of brain processes. Psychophysiology, Lipps points out, presupposes both descriptive and causally explanatory psychology. "In so far as it is physiology," he says, "it is a special discipline of natural science. On the other hand, it is wholly dependent on psychology, \* \* \* It is the physiological interpretation of a knowledge of psychology independently gained" (p. 18).

To the writer of this notice it seems futile to discuss from the standpoint of psychology the paper thus briefly outlined. Two of the paths which Lipps calls psychological are metaphysical windings. In plain English, what Lipps calls pure science of consciousness and what he names causally explanatory psychology are not psychology at all but philosophy of mind—bad philosophy at that, though this is not the place to discuss it. One regrets the more the pertinacity with which Lipps foists on psychology these metaphysical conceptions, since his descriptive psychology, left to itself, has such merit.

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*J. G. Sulzer's Psychologie und die Anfänge der Dreivermögenslehre.* DR. ANTON PALME.

This monograph will be of interest to the students of Kant as well as the students of psychology. It is an attempt to locate the sources of the now commonly accepted doctrines of the three-fold nature of mind. Sulzer's priority, according to the author, is based upon his analysis of the emotional processes. Aside from the main issue the discussion contains some material of interest to the historian of psychology, both as to terminology and doctrine. It was not Tetens or Mendelssohn, but Sulzer who gave to Kant the clue for his later and more developed formulation.

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### ATTENTION.

*Analyse de l'Attention.* M. SÉROL. *Revue de Philos.*, 1905, VII., 597-620.

Attention as a state of tension is analyzed into its various aspects by M. Sérol, who, following M. Eggers in the general description, then proceeds most thoroughly and intensively to differentiate the various processes.

Tension is opposed to relaxation, and if we compare mental activity to a bow, a loosening of the string would represent repose and ease, and a tightening of the string intensity and concentration. In the latter state of affairs there is a fixation and intensification of the moment of consciousness concerned, in the higher stages, an end functioning for this purpose. There is fixation, reinforcement and suppression of distracting influences.

Following the discussion of M. Sérol, I give schematically the different aspects of attention as brought out by him:

### ATTENTION.

Psychic elements. Form of attention.

#### DESCRIPTION.

*External or sensorial.* Object is external to the self and within control of the senses.

*Internal or reflective.* Object is not an impression of the senses, but a memory image or an abstract idea.

1. Psychological or subjective when it is turned towards affective states or voluntary acts.
2. Objective when it is turned toward cognitive states.
  - (a) Mnemonic or recall of past images or ideas.

- (b) Inventive or constructive when mental elaboration and noetic synthesis operate to form new images (constructive imagination), or new concepts (abstract or rational construction).

**EXPLANATION.**

*Spontaneous*, when instinct or acquired habit operates in the presence of a new situation.

*Voluntary*, when volitional determination operates after deliberation.

**Motor elements. Matter of attention.**

*Motor inhibition.*

*Motor impulsion.*

*Psychic inhibition*, due to motor innervation.

*Psychic impulsion*, due to motor innervation.

M. Sérol discusses the function of motor inhibition and impulsion first. As inhibition, the motor element shuts out all movements which may act as arresting agents, because of their uselessness in the process, and their unnecessary absorption of energy. 'In a word, it economizes, not by hoarding up energy, but by dispensing it usefully' (p. 599). It prevents energy from being dissipated in useless processes. As a facilitating agent motor impulsion furthers mental concentration and intensity. On the psychic side, motor inhibition operates by preventing any rival image or idea from developing a series *leading away from* the focus under control. Spontaneous and distracting associations are shut out. This elimination of distraction never reaches absolute monoideism, some marginal elements always being present. The positive function of motor innervation is, as in actual motor impulsion, to keep focal the situation concerned.

In objective attention there is a progressive enrichment of the concrete situation under control. In the beginning only a vague outline is present, of which the parts are more or less indistinct. Little by little, as long as the attention persists, more details of the situation become developed, greater distinctness is acquired, and all the aspects, visual, auditory, tactile, etc., tend to form a synthetic unity of greater complexity of parts, and increasing differentiation of qualities. During this process there is felt congestion, fatigue, and nervous or muscular strain. Any ideation masses or series are excited solely by the situation or object concerned, and rise spontaneously to reinforce the impression.

'In reflection, consciousness as it were turns back on itself to consider its actual or virtual content, that is to say, to revive previously existent states in as stable and intense a manner as possible' (p. 607).

The revived images or ideas are in this case under control of the reason. Of the kinds of objective reflection, we may have the concrete and imaginative or the abstract and rational. The former is concerned in recall, the latter in invention.

In recall we have the serial revival of a number of images directed towards some end which is to be revived and focalized. As M. Bergson<sup>1</sup> has shown, we have as a starting point a *general impression* which then becomes serially explicated. "Images, affective states, ideas, seem to be the usual content of this vague and weak conscious moment which we may call the *general impression*. \* \* \* There then operates a tension on each of these imaginative, affective or ideal elements for the purpose of revival in the direction of the image to be recalled" (p. 609).

In invention we have a process of mental elaboration and noetic synthesis of elements previously existent and at present revived for the purpose of reaching some new combination. Two processes seem to be involved: (1) recall, and (2) reason and ideal construction. The revived states are focalized, and then explicated by a process of analysis for the purpose of ascertaining those elements which may be of service in functioning in the new complex to be formed. Mental synthesis then combines selected elements into new forms. Internal or reflective attention differs from external or sensorial in that, in the former, revived conscious moments predominate over the incoming impressions.

In voluntary attention the tension does not operate blindly, but it is directed to and guided by an end which functions in facilitating furthering elements and arresting hindering elements. The end is, of course, more or less known. *Ignoti nulla cupida*. Genetically we reach this state as follows: "In sensorial attention the process is most simple. Usually some object impresses itself strongly upon the senses of the subject who neither knows nor desires such object. This elementary impression is retained in the memory in the form of a memory image which sooner or later excites a desire for explicit knowledge. Then, after deliberation, the subject resolves to undertake the process of attention" (p. 616). This notion of end exists as a more or less general idea. 'Inner reflection fixates this end, intellect then finds the means necessary for its attainment' (617). Once the process is decided on, all motor innervations and inhibitions are directed to the end under guidance of those practical judgments which result from experience or rational induction.

<sup>1</sup> 'L'Effort intellectuel,' *Revue Philosophique*, 1902, p. 9. Bergson's expression is 'dynamic scheme.'

Even as briefly presented above, the discussion of M. Sérol is seen to be a very clean-cut presentation of the facts concerned in attention, and any additional comments on my part would be superfluous.

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#### SPACE PERCEPTION.

*Malebranche's Theory of the Perception of Distance and Magnitude.* NORMAN SMITH. *Brit. Jour. of Psychol.*, 1905, I. (Pt. 3), 191-204.

According to Malebranche, distance-perception in vision is a 'natural judgment' based on the signs of convergence, accommodation, magnitude of image, brightness and definiteness of image, and number and kind of intervening objects. Magnitude-perception is conversely a 'natural judgment' based on distance actually perceived, but not on distance otherwise cognized. In this way the increase in size of the sun near the horizon is explained as due to the sensible apprehension of the intervening landscape.

These 'natural judgments' are not framed by the finite mind, but are framed by God on the occasion of the occurrence of the sign, so that our knowledge of distance from direct perception is as if we had reasoned it out from a complete knowledge of the details of nerve-process, bodily position, and geometrical optics. This is only one instance of the way in which our sensations are constantly interpreted by natural, involuntary judgments, which Malebranche calls also 'composite sensations.'

This theory, says Smith, is superior to Berkeley's in that it does not suppose an apprehension first of the sign and then of the distance by association or inference, a supposition unjustified by analysis of experience. On the contrary, the sign need not be perceived at all, but the concomitant of the brain state produced by it may be the apprehension of the distance alone. This ignoring of personal experience and activity in the building up of distance perception is on the other hand, however, a defect in Malebranche's theory as compared with Berkeley's.

The fundamental criticism passed upon Malebranche's theory is upon the confusion resulting from the recognition on the one hand of the intellectual element in perceptions, which leads him to call them 'natural judgments'; and his attempt on the other hand to reduce perceptions to mere sense agglomerates as regards the finite individual, with the intellectual elements entirely on the part of God.

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KNIGHT DUNLAP.

## SYMBOLIC REASONING.

*Symbolic Reasoning, I.-VII.* HUGH MACCOLL. Mind, January, 1880; October, 1897; January, 1900; July, 1902; July, 1903; January, 1905; July, 1905.

Symbolic logic, including mathematics, Mr. MacColl defines as 'the science of reasoning by the aid of representative symbols; these symbols being employed as *synonymous substitutes for longer expressions that are required frequently.*' Of this definition he says: the words in italics contain the pith and principle of the whole subject.

In II. he justifies his choice of a certain symbol on the ground that it 'is easily formed, occupies but little space—two important considerations—and, though this is less important, because it is not unpleasing to the eye.'

In III. we find an illustration of his abbreviated symbolism. The 'symbol  $A^{""}$ ' may be read, 'It is certain that it is certain that it is false that it is impossible that  $A$  is true.' With this preliminary discussion of his system Mr. MacColl proceeds to apply it to the Aristotelian logic.

In V. Mr. MacColl, after noting that he has carefully examined the points in which his logic differs from or resembles other modern systems, referring in particular to Boole and Jevons, concludes that 'the former are slight and superficial, while the latter are serious and fundamental.'

Underlying the discussion of Syllogistic Validity, which forms section VII., is an assumption regarding *reality* which was attacked by Mr. Russell in a discussion of the preceding section. The topic there under consideration was 'the existential import of propositions' and Mr. Russell pointed out that Mr. MacColl assumes (p. 74) 'two universes, the one composed of existences, the other of non-existences,' and claimed that 'these two universes were not to be distinguished in symbolic logic.' Mr. MacColl, however, continues to make use of the distinction of 'real' and 'unreal' existences in the later section.

To those who have followed the recent discussions of 'reality' and 'existence' from the functional point of view, the problem offers little difficulty. If we set up two universes we have the problem of their unification and harmony. Cease to divide the universe and there is no problem. In fact, is not the asseveration of two universes a contradiction of the meaning of the term 'universe'?

Mr. MacColl, however, on the basis of this distinction, would commit us to an extension of our *Symbolic Universe*, or 'Universe of



Discourse,' so as to make it include not only the three syllogistic classes  $X$ ,  $Y$ ,  $Z$ , but also, what he calls their complementary classes, ' $X$ ', ' $Y$ ', ' $Z$ '; "these being so related to the former that if we take any class  $X$  and its complement ' $X$ ', the two are, on the one hand, mutually exclusive, and on the other, make up together the whole symbolic universe ' $S$ .'"

The significance of this complementary class we learn from the preceding paper: there is the universe of *real existences*, denoted by  $e_1$ ,  $e_2$ ,  $e_3$ , and the universe of *non-existences*, that is to say of unrealities, such as centaurs, nectar, ambrosia, fairies, with self-contradictions, such as *round squares*, *square circles*, *flat spheres*, etc., denoted by  $o_1$ ,  $o_2$ ,  $o_3$ .

Mr. Russell, in discussing this dualism, does not deny its validity, nor raise the question as to how we come to make the distinction at all, but contents himself with ruling it out of logic and mathematics as being there irrelevant. He says: 'These words [round squares, centaurs, etc.] have a *meaning*, which can be found by looking them up in a classical dictionary; but they have not a *denotation*: there is no entity, real or imaginary, which they point out; \* \* \* they are defining concepts without any entity to which the concept applies.'

But is this discussion and implied answer satisfactory? Evidently not, for Mr. MacColl rejoins: 'The crucial point which here separates me, I believe, from all other symbolists is that I regard the class  $o$ , whether empty or made up of unrealities, as necessarily *excluded* from *every real class*; whereas they all regard it as *contained in every class whether real or not*.'

Classes, for Mr. MacColl, are in reality three: those containing realities, the empty  $o$  class, and the  $o$  class made up of unrealities. The present reviewer is of the opinion that the real basis of Mr. MacColl's differentiation of the  $o$  class  $o_1$ ,  $o_2$ ,  $o_3$ , is found in the unrecognized psychological necessity of attributing an existential content to this ' $o$  class of unrealities. In so far as we have become cognizant of any slightest change in our motor disposition as the result of our cogitations upon centaurs, nectar, ambrosia, and the like, we do attribute to them a positive content, equivalent to reality and existence, and hence, psychologically, they have all the existential value for us that any object does. The nature of the distinction between the real and the unreal, the existent and non-existent, is functional. And this insight into the functional nature of all distinctions which the later philosophical discussions of reality have brought out seems to the present writer to clear up the crucial point of this logical discussion,

and to leave no place for the proposed extension of our logical machinery.

There are not two universes, whether we consider reality logically or psychologically. Once admit that the symbol *o* means *nothing* and we fail to see how 'unrealities' can be treated seriously as though they were *somewhat*.

Mr. MacColl's fallacy consists in setting up two *o* classes; the one empty, the other 'made up of unrealities.' The so-called unrealities, centaur, nectar, etc., are not to be classified with the contradictories, square-circle, and the like. The former, in so far as they are not 'empty,' are to be regarded as realities, while the latter belong, obviously, to the empty *o* class which the traditional logic recognizes.

ALBAN D. SORESENSEN.

CAMBRIDGE, MASS.

### BOOKS RECEIVED FROM MARCH 5 TO APRIL 5.

*Sociological Papers, Vol. II, 1905.* Published for The Sociological Society. London and New York, Macmillans, 1906. Pp. xiii + 307.

*Dynamic Factors in Education.* M. V. O'SHEA. New York and London, Macmillans, 1905. Pp. xiii + 320.

*Sex and Character.* O. WEININGER. (Trans. fr. the 6th German ed.) London, Heineman; New York, Putnams, 1906. Pp. xxii + 356.

*Experimentelle Beiträge zur Lehre vom Gedächtnis.* A. POHLMANN. Berlin, Gerdes u. Hödel, 1906. Pp. 191. M. 3.

*Kritik der Freiheitstheorien.* J. MACH. Leipzig, Barth, 1906. Pp. viii + 287. M. 4.50.

*La démence.* A. MARIE. (Bibl. Intern. de Psychol. Expér.) Paris, Doin, 1906. Pp. 492. Fr. 4.

*L'attention.* W. B. PILLSBURY. (Same series.) Paris, Doin, 1906. Pp. 305.

*Gehirn und Seele.* P. SCHULTZ. Ed. by H. BEYER. Leipzig, Barth, 1906. Pp. 189. M. 5.60.

*Art et psychologie individuelle.* L. ARRÉAT. Paris, Alcan, 1906. Pp. 159. Fr. 2.50.

- Beitrag zur vergleichenden Rassen-Psychologie.* A. PILCZ. Leipzig, Deuticke, 1906. Pp. iv + 44. M. 2.50.
- Nature et société.* S. JANKELEVITCH. Paris, Alcan, 1906. Pp. 188. Fr. 2.50.
- La philosophie de la longévité.* J. FINOT. (11<sup>e</sup> éd.) Paris, Alcan, 1906. Pp. v + 358.
- Causeries psychologiques. 2e Sér.* J. J. VAN BIERVLIET. Gand, Siffer; Paris, Alcan, 1906. Pp. 165. [Four collected papers.]
- The Life of Reason.* Vol. V. *Reason in Science.* New York, Scribners, 1906. Pp. ix + 320. \$1.25 net.

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### NOTES AND NEWS.

IN the Yale department of philosophy, R. P. Angier, Ph.D. (Harvard), at present assistant in the Berlin laboratory with Professor Nagel, has been appointed instructor in psychology. Mr. E. H. Cameron, M.A. (Yale), at present fellow in psychology and philosophy at Yale, has also been appointed instructor in psychology. Courses will be given during the coming year by Professor G. H. Palmer, of Harvard, and by Mr. H. R. Marshall. Professor Palmer will give a graduate seminary in Ethics, meeting the class every week. Mr. Marshall will give each week two courses, one in *Æsthetics* and one in *Psychological Theory*.

A SPECIAL alcove has been set aside in the Philosophical Library of the Johns Hopkins University to be called the 'Royce Collection of Philosophical Americana.' The alcove is endowed by a fund donated by Professor Josiah Royce, of Harvard University. It will comprise especially works, editions, MSS., etc., illustrating the sources and progress of philosophy in America.

DR. JAMES BURT MINER, assistant professor of philosophy at the University of Iowa, has been appointed assistant professor of psychology at the University of Minnesota, to succeed Dr. G. H. Johnston, who resigned last summer. He will begin work there next autumn.

WE learn that Dr. W. B. Smith, of the chair of mathematics at Tulane University, has been appointed professor of philosophy in that institution.

THE annual spring meeting of experimental psychologists will be held at New Haven on April 18 and 19, at the Yale Laboratory.

THE sixth annual meeting of the Western Philosophical Association was announced for April 13 and 14 at the University of Wisconsin, Madison, to be held in conjunction with the meeting of the North-Central Section of the American Psychological Association.

WE have received the first number of the *Journal of Abnormal Psychology*, edited by Dr. Morton Prince (458 Beacon St., Boston) with the assistance of an editorial board (bimonthly, beginning April, 1906; Boston, Mass., Old Corner Bookstore, \$3).

ANOTHER new serial publication is the *Klinik für psychische und nervöse Krankheiten*, announced by Carl Marhold (Halle), to be devoted to the quarterly publication for two years of matter from the clinic of Professor R. Sommer of Giessen (M. 3 the number).

DR. TOULOUSE, editor of the excellent *Bibliothèque internationale de Psychologie expérimentale*, announces through the same publisher (M. Octave Doin, Paris) a *Bibliothèque Biologique et Sociologique de la Femme*, 'a résumé of knowledge of the biology, anthropology, psychology, pathology, pedagogy, and sociology of woman,' to be written by a body of distinguished authorities (15 vols., 4 fr. each).

THE Danish Royal Academy of Science and Letters announces a prize competition on the following topic: 'To examine, from the point of view of the theory of knowledge and from the point of view of psychology, the relation between Criticism and Pragmatism.' The competing essays must be ready by October 31, 1907; a gold medal will be awarded as first prize. For particulars address Professor H. G. Zeuthen (Secretary of the Academy), at the University of Copenhagen.

PROFESSOR M. V. O'SHEA, of the department of education in the University of Wisconsin, has been granted eight months' leave of absence, which he will devote to the study of contemporary European education. He will spend some time at the universities of Paris, Berlin, and Oxford. While abroad he will deliver a number of lectures on contemporary educational ideals and practice.

THE following items are taken from the press:

DR. F. KRUEGER, docent in philosophy at Leipzig and assistant in Professor Wundt's laboratory, has accepted a call to a chair of philosophy in Buenos Ayres.

DR. RALPH BARTON PERRY, assistant professor of philosophy at Harvard University, has declined a call to a chair of philosophy at Leland Stanford University.

PROFESSOR GEORGE H. HOWISON, of the University of California, will give a course of lectures at Yale University on 'The Human Import of Philosophy.'

